

PLASTICS & MOLDED PRODUCTS

APR 31 1932

Volume 8

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Molding & Molders	New Displays etc.	New Opportunities
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Technical Abstracts	Old Materials	Personal News
Business & Trade News	Chemical Problems	Finishes & Color
New Products & Uses		New Markets

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Given by	914 Authorities
Who tell their experience in more than	800 Problems

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PLASTICS & MOLDED PRODUCTS

Reg. U. S. Pat. Off.

Volume 8

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The Relation of Design to Plastics

By Bryan B. Paul

Material and Process Engineering Department
Westinghouse Electric and Manufacturing Co.

THE selection of the proper type of molding material for new applications, in combination with the design of the parts, has become one of the most interesting activities of the engineer connected with plastics. The availability of the large number of compositions now makes the selection more difficult, particularly so with the present practice of price cutting which the pioneer must encounter when a product is placed on the market. Usually the first choice of material for the application must be the final one as any mold change may prove to be very expensive or less satisfactory economically for production with the tools designed for the originally specified plastic.

The progress made in molding technique is equally as important a consideration as that of the introduction of new compositions or the modification of those existing. The success of the average manufacturer now largely is determined by the ingenuity of the mold designer who must be thoroughly familiar with the characteristics of the new materials to be molded. The part taken by this designer has meant very much to the industry in the extension of

plastics into new applications and the resultant intricacies of the new products. Molded parts, which a few years ago were considered to be of impossible design, are now welcomed as desirable for practical quantity production.

Molder Set-ups

Some molders of plastics are interested in a very wide range of materials but many of them have confined their activities to special subdivisions. This limitation may be due to the lack of flexible installations of equipment, the advantages of sales concentration, limited technical supervision, or the large investment required for some of the modifications. A few of the larger electrical products producers are engaged in widely diversified fields of molding either on account of more economical production, accessibility to molding specialists for the correlation of design of equipment, frequent changes due to improvements in apparatus, immediate deliveries in limited quantities, or demands for special types of insulation not available

or not profitable for the average producer.

Available materials for molding in several of the largest companies are very well illustrated in the following classification of products of the Westinghouse Electric and Manufacturing Company.

Moldarta is a trade name applied to the thermo-setting compositions consisting of such resins as phenol-formaldehyde or urea-formaldehyde in combination with wood-flour, asbestos fibers, or other finely divided fillers. In the so-called phenol-formaldehyde group additional modifications such as cresol - formaldehyde, cresol furfural, or phenol furfural resins are included. The field of molding for Moldarta is the most extensive of all plastics for the reason that the molded parts have such a wide applica-

Wider application of synthetic plastics will come as the designer grows more familiar with the materials available. The consumer knows the limitations of glass, porcelain and metals; molded products are still in the infant industry class and the public has yet to learn that none of them will stand up under every possible abuse. Properly applied, molded products give excellent service.



Forming of inorganic molding composition, used for high arc resistance.

tion in various industries and in domestic use. From these plastics are made such products as meter cases, numerous bases for the electrical industry, commutators, pushbuttons, clock cases, radio tube bases, insulators, knobs of various types, and numerous other parts. Most of the older materials have been largely replaced with the phenol-formaldehyde resin compositions of this class.

Surface and Heat Resistance

Inserts may be incorporated satisfactorily with most Moldarta materials and the compactness of resulting units, permanence of the original surface, resistance to many of the common solvents, resistance to distortion, usual good mechanical strength, the availability of colors and the suitability of the material for intricate shapes are all important features accounting for the extensive demand for the molded parts. The strength of the materials in this class vary considerably and it is frequently necessary to sacrifice some property in order to obtain the best results, for example maximum heat resistance (up to 200°C for continued service), for high voltage insulation at 80°C, for modifications to be used in light or heavy friction drive service, for low cost bulky structural parts, or for insulation at radio frequencies.

The size of the moldings of this group may vary from extremely small dimensions up to a length of several feet; however, very few parts of any

great size are produced in commercial quantities.

Recently resins of the urea-formaldehyde type in combination with paper pulp as the filler have been added to the list of Moldarta materials. The decorative field is about the only one which has created a demand for such moldings; however, signal lenses for switchboards and lighting fixture caps have been used to a limited extent.

Molded Micarta is the Westinghouse trade name for the thermo-setting molded products consisting of a resin in combination with paper or cloth. The finished part usually has a higher impact resistance than that made of Moldarta. Chopped treated paper remaining from the preparation of special shapes is used in molding such parts as line insulators of very good finish, wire-spool heads, and large parts frequently assembled in combination with other forms of Micarta. These moldings have created an important outlet for the impreg-

nated remnants which otherwise would be a waste product. Inserts may be incorporated during molding and the final products may be of fairly intricate design.

Remnant materials of treated cloth cuttings are also chopped, shredded, or punched into relatively small pieces and then finally molded to shape in the manufacture of numerous parts. This form of molded Micarta is very strong and invariably is much superior to Moldarta in impact resistance. For this reason the demand for the material has increased to the extent that much cloth must be treated to supplement the available trimmings. Special grades of cloth cuttings are also treated in large quantities in the preparation of materials for special applications.

Cloth Base Moldings

In addition to the chopped or shredded pieces, treated sheets or built up forms may be used in a balanced combination to produce parts of such complicated design that the laminated form is impractical for molding. Through this combination a great strength is obtained in the sections that bear most of the stresses. Examples of various modifications of cloth base molded Micarta are to be found in insulators, industrial equipment, spinning buckets, gears, and numerous other parts for mechanical service.

Molded Micarta also includes many combinations of all lam-

(Continued on page 163)

Assembly of molded commutator bars and segments.



Texture Contrasts

A designer's viewpoint on the suitability of laminated plastics as a decorative surface

By Henry Dreyfuss

SO much has been said about the use of synthetic material for purely practical purposes. So little consideration has been given to the excellent qualities of this material as a medium for decoration.

For centuries the theory of contrast has been a standby of the artist and designer. When every assistance has been lent to a purpose so far as line, proportion, and color are concerned, the next consideration is texture.

For instance, take one color, use it in a dull finish; directly next to it use that identical color but now with a highly reflective surface; the contrast can be dramatically effective. Formerly, to gain this effect a difficult polishing operation was necessary—leaving some surfaces rough, polishing others—now it is a different story. It is simple to put your textures into the mould; while creating the original tools the decoration can be applied. The article coming from the mould is complete. Expensive and difficult finishing operations are eliminated.

As an example of synthetic products used in decoration:—The mirror has long been a favorite motif of the decorator. Not because of the perfect picture that it produces (many decorators purposely distort the image), but because of the reflective surfaces, and the sense of space and depth gained. Contrast this shiny hard surface with the soft effect of draperies or the dull quiet of plaster,

Polished Formica sheets, and mirrors, contrast with frosted glass in making this bar, built for Louis G. Brecker, conform with the designer's requirements.

and immediately an added effect is obtained. Now with synthetic materials the decorator has more at his command. For he can obtain contrast in surface texture within one material—a design in a dull finish on a shiny surface. A shiny material contrasted with a dull one.

The accompanying photograph shows an ordinary closet of somewhat less than ample proportions converted into a rather useful purpose. We were given this small hall closet, approximately five feet square, and asked to create a bar. An effect of size was obtained by using mirrors on the wall, and highly reflective black Formica (Bakelite in sheets) on all the doors of cupboards, walls, ceilings, and on the back of the door leading into the closet.

Below this is a piece of frosted glass repeating the frosted glass which forms the top of the bar. Thus the contrast in texture of the highly polished Formica and mirror, with the dull frosted glass. The honeycomb rack to hold the bottles is of dull galvanized metal—once again contrast in texture, for the highly polished bottles reflect light while the material retains its flat surface.

A mirror was hung at eye level, below which a clear glass

shelf was placed to hold the glasses.

Inside the bar, underneath the frosted glass top, electric bulbs were placed so that the light shoots up through the bottles and glassware.

The edge of the bar, the foot rails (not shown in the photograph), the hardware and all other accessories, etc., are all in chromium plate.

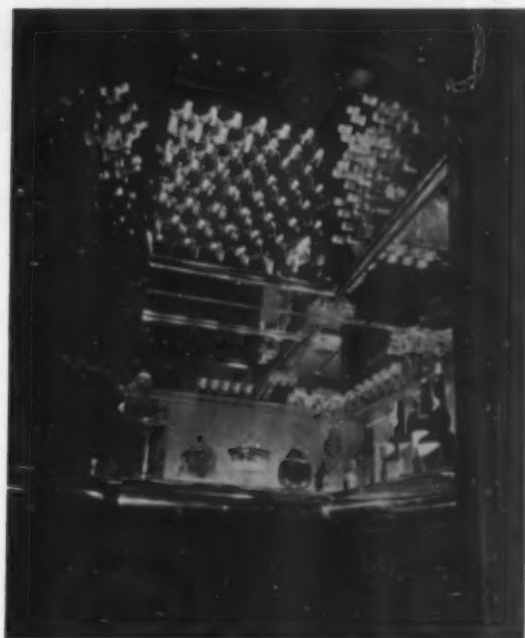
The floor is of shiny red rubber. The glassware is ruby.

The fact that Formica can be installed by a carpenter or cabinet-maker who heretofore has been used to working only in wood is worthy of note. With a slight explanation a carpenter constructed this bar in a minimum amount of time. Of course the services of a painter were not necessary.

The ease with which this material is cleaned, its durability, and the fact that it is not affected by the ravages of potent liquids, all speak in its favor.

Here is another material at the decorator's disposal!

The use of the two textures can be applied to merchandise as well as to decoration. Stripes, dots, patterns, or designs in contrasting texture can be as effective as high modelling or combinations of foreign materials.



Molded Products Attract Many Visitors At Chicago Packaging Exposition

New Closures, Containers, Display Stands Mark Industry's Growth Since Last Show. New Wrapping Material Featured

PLASTICS and the plastics industry played a prominent part in the Second Packaging Conference, Clinic and Exposition, held at the Palmer House, Chicago, the week of March 7th. Although synthetic materials are relative newcomers in the packaging field, glass, metal and paper being used since time immemorial, five companies had booths showing the tremendous strides the newest packaging material has made in but a few years.

New Wrapping Material

Some of the new materials and applications, such as cellulose acetate wrapping materials, molded counter displays and re-use containers proved entirely new and very illuminating to some of the largest users of

wrapping and packaging materials. Attendance was large, over 2000 on Thursday of that week, and plastics exhibitors report satisfaction with the results of the exposition.

The products displayed at the Celluloid Corporation's Booth consisted of a transparent cellulose acetate wrapping material, Protectoid, and the cellulose acetate plastic, Lumarith. Protectoid was displayed in sheets and rolls in the popular thicknesses and colors, printed and plain, as well as packages showing uses of Protectoid as a wrapping material, windows in cartons, boxes and envelopes. Printed wrappers, laminated with Protectoid aroused considerable interest among those who attended the Exhibition. One of the manufacturers of tight wrapping machinery exhibited some coffee cartons which had been tight-wrapped with protectoid laminated wrappers. This display also proved effective.

Closures and other moulded items such as face cream jars, humidors and containers made of Lumarith in attractive colors and combinations of colors were displayed and proved to be of interest to visitors.

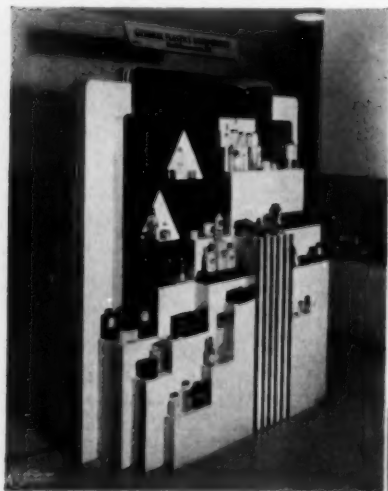
The Bakelite Corporation ex-

hibit included numerous resinoid molded packages, boxes, trays, signs and a large variety of tube and bottle caps. It also included the Bakelite Packaging Suggestion Cabinet which was circulated in the packaging field for some months past.

A touch of modernism was lent to the exposition by the display of General Plastics, Inc., featuring Durez molding compound as a packaging material. Molded boxes, trays, containers, display stands and counter vending devices, as well as Durez-capped tubes, bottles and jars, were featured in the exhibit. Great interest was focused on the use of phenolic plastics for packaging work, the Culver Nail Bath, molded of a special inert Durez, and the Norwich Display Stand for Pepto-Bismol, received the lion's share of the attention.

The Norloc Line

Only one trade molder showed a line of molded products, Norton Laboratories, Inc., of Lockport, N. Y. Their exhibit featured the modernistic confection or powder box with excellent re-use possibilities, molded in both light and dark-colored materials; the Elgin watch



Packaging Show booths of the plastics companies were as modern as the products featured. New applications of synthetic plastics proved the great advances made by the industry in packaging since the first Exposition last year.



display case that has created so much favorable comment; the molded Visualette Demonstrator Camera case; the Parker Pen box and a number of other applications. Armstrong Cork Co., Lancaster, Pa., showed their line of molded collapsible tube and bottle closures.

Packaging Problem Clinic

A feature of the annual meeting is the conference and clinic on the whys and wherefores of packaging. Two outstanding experts in package design and development said much that can be applied to the molded package of the future. Francis Chilson, consultant in package design, took as his subject "Reducing Costs Through Package Design". He said, "The greatest opportunity to cut costs lies in standardization of packaging materials. This means the substitution of a few standard containers for a great many special ones. Standardization makes possible larger purchases of the standardized packaging materials, thus reducing first cost, handling changes and floor space, while at the same time increasing inventory turnover;—hence, decreasing the amount of capital invested in packaging material inventories. Production costs are reduced because the equipment can be set up for a certain size and operated until all products in that size of container have been packaged. Records connected with purchasing, receiving, accounting and production control are immensely simplified because of the fewer packaging materials that need be accounted for. Besides all these benefits, the line itself is made more flexible; new items can be added and old ones dropped when they show signs of failure without any loss other than that involved in the destruction of a few labels or perhaps a few cartons."

Ben Nash, Merchandising Counselor, used a number of plastic molded examples to illustrate his lecture, "What

Makes an Effective Package?" Several recent molded jobs provide an answer to the following remarks of Mr. Nash." Our products, after all, should always be their own best advertisements and salesmen. In the stores where they are offered for sale—on the dealer's shelves and counters — our products' packages or method of packaging largely perform these sales functions for them, but this only in such measure as they are able.

"These new self-selling products should show a greater re-

turn for the advertising and promotion dollars of the future. The products which once dragged and burdened the advertising and selling budget because they had nothing to say for themselves at the counter will do something to look back at in wonderment. An effective package is the result of a sound and fitting merchandising conception which skillfully uses packaging resource or material which will help make a self-selling product that invites possession. Today's effective package must sell on sight.

Japanese Pyroxylin Producers Form Group to Maintain Prices

By R. Sekido

PPRICE slashing and the competition of imported pyroxylin waste have convinced Japanese pyroxylin manufacturers that their only salvation is in a co-operative association and a high tariff. Leading manufacturers are already working out the details of the association and the government has been petitioned to raise the tariff on imported waste to a level with the rate on imported prime material.

Due to keen price competition, cost of pyroxylin sheets dropped to the low of 1.60 Yen per kilogram, on the average, in 1931. With a view to stabilizing prices, ten companies, including Dai Nippon Celluloid, have agreed to form an association under the Japanese commercial law. Its purpose will be to control the industry through co-operative sales and supply, the inspection of finished products and the control of production. The official name of the group will probably be the Japan Celluloid Association.

High Duty Asked on Scrap

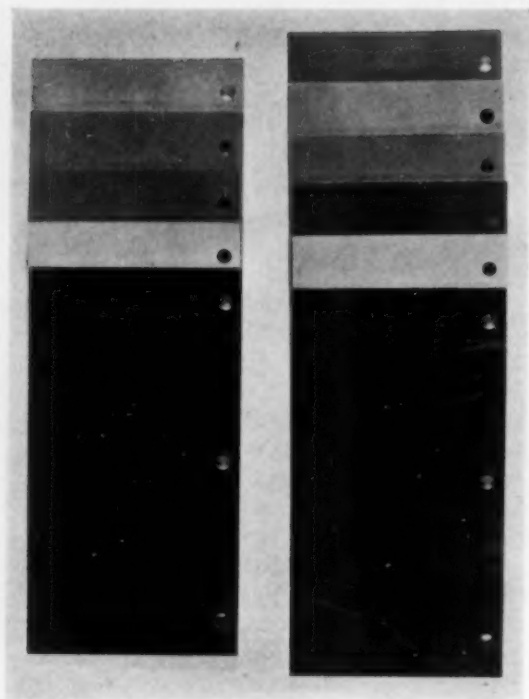
Constantly increasing imports of pyroxylin waste have not only been a disturbing factor in the pyroxylin market but have also had a bearing on the natural camphor industry. The import-

ed waste has a considerable camphor or camphor substitute content. This has caused a diminished demand for natural camphor, in which the Japanese government has an interest. Moreover, the imported waste is of the hard variety and is not suitable for thin sheets.

In order to protect both the native camphor industry and pyroxylin manufacturers, it is proposed to raise the 20% ad valorem duty on imported waste to the equivalent for pyroxylin, that is 56 Yen per picul. In 1931, 40,000 kilograms of pyroxylin waste were entered through the port of Yokohama. Current prices for chips are about 0.25 Yen per kilogram.

Norman Receives Hercules Development Post

APPPOINTMENT of George M. Norman as manager of the Development Department of the Hercules Powder Company is announced by Russell H. Dunham, president. Mr. Norman, who is a director of the company, has been head of the Technical Department, the divisions of which will now function separately. H. E. Kaiser will supervise research and experiment, and G. E. Ramer will supervise engineering activities.



Black and white reproduction affords scant justice to the bright grays, greens and scarlets in the new Continental-Diamond line. Some contrast is indicated, however by the black and brown panels at the bottom of the two columns.

New Laminated Plastics in Pastel Colors

Black and Brown Lines are Supplemented by Light and Bright Shades

By N. W. Sieber

Advertising Manager
Continental-Diamond Fibre Co., Inc.

DILECTO—a laminated phenolic product—in pastel shades, natural wood grains, marble effects, and modernistic designs, is about to be announced by the Continental-Diamond Fibre Company. The natural lustrous finish of Dilecto sheets, its resistance to scratching, marring by lighted cigars and cigarettes, and the fact that it is impervious to water, oil, and ordinary solvents such as alcohol, benzene, acetone, turpentine, etc., make its use practically unlimited in furniture and store fixture manufacture, and building construction.

Surface Resistance

Dilecto decorative sheets are an entirely different product from the electrical insulating material of the same name. The decorative sheets are manufactured to give a beautiful lustrous finish, highly resistant to scratching or marring and to the action of water, oil, and chemicals likely to be used in cleaning, in serving foods or soft drinks, and even against temperature extremes and the weather when used for outside paneling or store fronts.

The basic material is a highly

absorbent, yet tough paper. This paper is thoroughly saturated with phenolic resin, the color sheets likewise saturated, are placed on one side, both sides, or different colors on each side, and pressed in hydraulic presses under high heat. The finished sheets not only have a heavy protection of the set resin but are thoroughly saturated with it, giving the appearance of glass but having great strength and hardness without being brittle.

Because of this thorough saturation with resin, the sheets can be cut or machined in any

way without impairing their resistance to moisture, oil, and chemicals.

The colors immediately available include black, brown, light gray, battleship gray, light green, pea green, dark green, light blue, red, dark red, ivory and white. Wood grains are walnut, mahogany, and burl walnut. There is also a green and black marble finish.

Standard size sheets are 38" x 38" and 38" x 43". Thicknesses start at 1/32". Dilecto decorative sheets can be used for veneering by glueing with a casein waterproof glue.

New British Import Duty on "Composite Goods"

THE British Board of Customs and Excise has issued a statement on the new import duties, which came into force on March 1, announcing that a duty equal to 10 per cent ad valorem will be imposed on all goods imported into the United Kingdom, save a special list of "free" goods.

There is a special clause regarding "composite goods," which will interest the plastics industry. This term covers goods which are liable to a duty

of Customs only in so far as they contain some dutiable part or ingredient. Such goods will be liable to the general ad valorem duty only in so far as that duty exceeds the duty already chargeable on the dutiable part or ingredient.

Durez Booklet

General Plastics, Inc., N. Tonawanda, N. Y. are distributing their new booklet, "Speaking of Molded Packages" to all interested. Printed in the modern fashion, it features Durez, the modern plastic compound, in all types of molded packages.

Molded Plastics and Their Test Methods With Special Reference to Curing Time

By Herbert Chase, M. E.

*Based largely on an interview with J. M. Wilson and W. W. Werring
Engineers of the Bell Telephone Laboratories*

IN telephone applications as well as in many other lines of engineering work, plastic materials are continually gaining wider use. Dispositions to consider them merely as insulating materials are gradually being overcome. Engineers generally recognize the excellent electrical insulating qualities of many plastics, but do not always realize that these qualities are often secondary to structural qualities. Plastics deserve to be classed with other materials of construction and their physical as well as their electrical qualities merit the consideration of every mechanical and electrical engineer and of the manufacturer who aims to make the most of modern developments in materials.

Precisely this situation exists in the telephone industry, and the engineers who design and direct the manufacture of telephone equipment are well aware of the advantages of plastics for structural as well as for insulating materials. It is quite in order, then to enquire what qualities are sought and how

these qualities are measured. Here we shall consider primarily molded plastics as distinct from those furnished in sheet form through the impregnation of fibrous materials. These are worked primarily by machining, whereas the plastics to be considered here are primarily of the molded type formed to final shape in rigid molds by the application of heat and pressure.

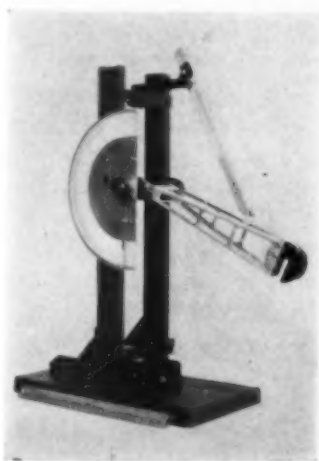
Significance of Impact Load

Tensile strength is seldom a factor in molded plastics, as they are rarely used in tension. Many of them, however, have a fairly high tensile strength, especially in proportion to their weight, and they are lighter than any common metal. Of very great importance is their ability to resist shock or impact loading, and it is this quality that receives much attention by telephone engineers, as many parts of their apparatus may be subjected to shock and be easily damaged if the material is too brittle. In consequence, impact testing receives much consideration and special (now standard) impact testing machines have been developed through cooperation of the Bell Laboratories' engineers with the American Society for Testing Materials.

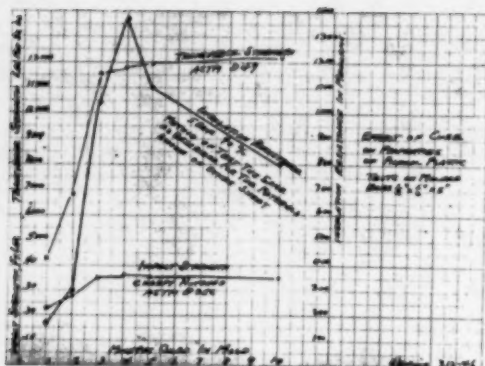
In these machines standard notched samples of molded plastics are subjected to shock loading by the impact of a falling

pendulum. The energy absorbed in breaking the piece is measured by noting the swing of the pendulum beyond the point at which it strikes the piece. Test pieces have a standard section $\frac{1}{2}$ in. square and a standard form of notch. As the energy absorbed often amounts to as little as 0.15 ft.-lb., a comparatively light pendulum is necessary.

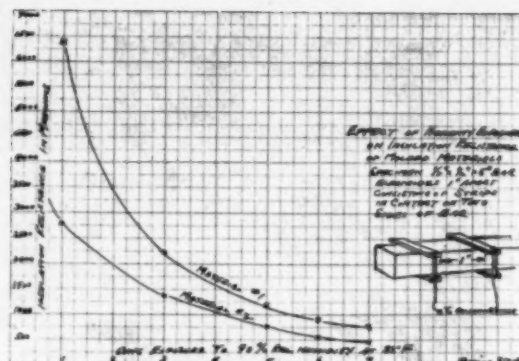
In preparing the standard sample certain precautions are required if consistent results are to be secured, and much the same applies to molded parts that may be subjected to shock in service. One of these precautions has to do with the length of cure, and this is an important factor with some plastics, as it has a direct effect upon the time required in the mold and consequently upon the production rate. An accompanying curve for a phenol plastic shows that in this case the impact strength increases rapidly as the time of cure is increased up to three minutes, but thereafter remains practically constant, at about 0.35 ft.-lb.



Two of the two-ft.-lb. impact testing machines employed by the Bell Laboratories for testing plastics. Left, the Charpy machine in which specimen is supported at both ends; right, Izod type of machine having piece supported at one end. Both machines give the same order of results.



Typical curves showing the effect of time of cure upon the impact strength, transverse strength and insulation resistance of standard samples of molded phenolic plastics. A three to four-minute cure gives substantially optimum results in all three respects.



Exposure to air having a high humidity content has a marked effect upon the insulation resistance of most molded materials. The curves show how for two $\frac{1}{2} \times \frac{1}{2}$ -in. samples the resistance varies as the time of exposure continues, reaching an approximate minimum after seven days.

Another precaution is to bring the sample into equilibrium with an atmosphere of definite humidity. In the Bell Laboratories this is done by baking the test specimens for 48 hours at 120° F. and cooling in a desiccator before testing. This condition was chosen as the most likely to disclose the lower limit of strength to be expected in service.

Cure and Transverse Strength

Another factor which concerns the user of plastics is the transverse strength of molded parts. The test is made with an ordinary transverse testing machine and a standard test sample. Here again the length of cure has an important effect, as the accompanying curve for a phenol plastic indicates. From this it is evident that a cure of less than three minutes greatly impairs the transverse strength of this plastic but that cures in excess of three minutes produce only relatively slight increase in strength. These tests apply to pieces of standard section, and are representative of average samples of good grade phenolic material. Changes in section thickness and doubtless also in the composition and method of manufacturing the powdered phenolic material may have a decided effect upon the results obtained.

Another factor that affects the utility of many if not all plastics is their tendency to absorb water, particularly as this

in turn affects their insulating properties as well as their mechanical strength. Phenolic and some other plastics are sometimes termed "water-proof", and, as compared to some other materials this is relatively true. In fact, some molded plastics can be immersed in water for long periods without showing very material increase in weight as a result of water absorption. When subjected to a humid atmosphere, however, practically all plastics, even though thoroughly cured, not only absorb moisture, but continue to absorb increasing amounts over periods of several months and to suffer a corresponding loss in insulation resistance.

Insulation Resistance

Curves in an accompanying chart show how two plastic materials decrease in insulation resistance as time progresses when they are subjected constantly to a 90 per cent relative humidity. The slope of these curves indicates that the decrease in insulation resistance is very rapid during the first two or three days but thereafter proceeds at a slower and slower rate until it is approximately constant. It is then, however, less than ten per cent as great as for a dry sample. Some phenolic molded materials absorb as much as 0.4 per cent of their own weight in moisture from humid air in a week's time and with certain other plastic materials the percentage is as high as 4 per cent. Designers

ought, therefore, to keep in mind possible effects that may be encountered with hygroscopic insulators when they are subjected to highly humid atmospheres for considerable periods. For many purposes, however, and especially when voltages are low these materials are entirely adequate as insulators, but their limitations should not be overlooked.

Method of Test

Tests of moisture absorption from humid air require rather special and somewhat cumbersome equipment. They are conducted with the sample in a substantially air-tight and heavily insulated chamber constructed with walls made in the same way as those of refrigerators in order to maintain a constant temperature (85 deg. F.) and a constant humidity of 90 per cent. The temperature is controlled by electrical heating coils in the air space between walls, the input to which is in turn controlled by thermostats. Because of the good heat insulation, very little heat has to be added from this source. A blower to circulate air through cooling coils is also provided in case the room temperature in summer exceeds 85 deg. F. Humidity is controlled by placing a pan of sulphuric acid in the bottom of the compartment and diluting it with the correct amount of water to give the required humidity. Being practically air-tight, there is no special control of humidity, requir-

ed beyond that of maintaining the acid at the correct gravity. Relative humidity is measured by the usual wet and dry bulb thermometers, a new wick being applied wet bulb as frequently as required to maintain a correct reading.

Samples to be tested are placed on shelves on the inside of the chamber door and leads from standard brass clamps fastened to the sample $1\frac{1}{4}$ " inches apart (leakage distance one inch) are carried through the door to a galvanometer arranged with a standard Wheatstone resistance outside the compartment. With a suitable calibration, changes in insulation resistance of the sample over any desired period of time are readily measured. Samples are bars of $\frac{1}{2}$ in. square section 5 in. long, and many can be accommodated at one time, as a large number of leads are carried through the door. Although the test itself is a simple one and the conditions desired are readily maintained once the apparatus is set up, it unfortunately requires several days to bring about a relatively stable condition so far as moisture absorption by the sample itself is concerned. This advantage is fully realized, but as yet no satisfactory substitute for the test is known.

Insulation Resistance in High Humidity

The effect of cure upon the insulation resistance of samples afterwards subjected to a five-day humidity test is shown by the remaining curve in the accompanying chart. From this it will be seen that the insulation resistance rises rapidly, though somewhat irregularly, in the case of these samples as the length of cure is increased up to four minutes, but that further curing cause a somewhat less rapid drop in insulation resistance to slightly more than 50 per cent of the maximum. It therefore appears that a cure of three to four minutes not only

affords maximum impact and substantially maximum transverse strength, but also maximum insulation resistance under the adverse 90 per cent relative humidity conditions named. Although the values given in the curve undoubtedly change to some extent with other factors besides cure, there can be little doubt but that undercuring results in considerable sacrifice in strength (both impact and transverse) as well as in insulation resistance.

Cold Flow

Still another test which yields useful information about a quality often overlooked in selecting plastics is that of cold flow, or the tendency of the material to take on a permanent set when subjected to moderately heavy loads. It is this quality which results in the loosening of screws or bolts used to hold two or more pieces of plastic together or to fasten metal to plastic parts. Under the pressure exerted by the screw the plastic slowly yields and may ultimately change its dimensions so that practically no pressure remains.

Cold flow is measured in the Bell Laboratories by subjecting half-inch cubes of the material to a pressure of 1,000 pounds, or the equivalent of 4,000 pounds per square inch, for a period of 24 hours and measuring the distortion of the piece by means of a dial gauge at the end of each hour. During this test the sample rests upon the anvil or bed of the machine shown in accompanying illustrations. Pressure is applied by urging the bed up-

ward against the piece, the top surface of which rests against a fixed ram. Weights which apply the load act through the simple lever shown and are lifted to insert the load by the small hydraulic jack at the rear of the machine. The dial gauge is set to give a zero reading after the load is applied. Deflections which occur thereafter are the result of cold flow and are measured in thousandths of an inch with tenths of thousandths estimated.

Since cold flow is affected materially by the temperature of the sample, it is essential that the temperature remain constant during the test. In consequence, the testing machine is placed within a cabinet having heat-insulated walls and a small blower for circulating the air and electric heating units for maintaining it at constant temperature through thermostatic control. Tests are run at 105 deg. F. and also at 120 deg. F. With materials such as shellac-mica mixtures even this 15-deg. difference makes a marked difference in cold flow, as at the lower temperature the material shows comparatively little flow whereas at 120 deg. F. it shows a large flow. In the Bell Laboratory installation five of the cold-flow machines are installed in one cabinet and a thermometer is placed at each machine. A glass door in the front wall makes it possible to take readings without opening the cabinet. This machine, as well as much of the other apparatus

(Continued on page 173)

Battery of five of the machines developed by the Bell Laboratories for measuring cold flow in plastics. In service these machines are enclosed in a cabinet having facilities for close regulation of temperature. The dial gages register the amount of cold flow. The levers above them control the hydraulic jack which lifts the loading weights when the sample is inserted.



Gang Molding Method of Forming Pyroxylin Toothbrushes

HERETOFORE it has been the general practice to make tooth brush handles by cutting rectangular blanks in predetermined size and shape from a sheet of material, molding the blank in a die press to form a handle of proper size and shape and then finishing and polishing the handle manually. In this method the rectangular blank was of necessity larger than the finished handle and the excess material was forced out between the edges of the die forming a fin or flash. These fins or flashes were around the outside edges of the handles and had to be removed by hand methods as it was not practical to do the work by machine. The method described involved a large number of steps and was slow and caused waste because of the loss of material contained in the large fins or flashes amounting to from 10 to

The description of this process is quoted from U. S. Patent 1,839,699 issued on January 5th, 1932 to Frederic A. Parkhurst, assigned to Pro-phy-lactic Brush Co., of Wilmington, Del. Application was filed August 2nd, 1929.

15 per cent and also because of the expense of removing the fins and finishing the blank.

The object of my invention, therefore, is to provide an economical and practical method of making tooth brush handles which will avoid the difficulties and causes of expense already mentioned.

I accomplish this result by molding a large number of tooth brush handles in gangs or groups, the handles being on edge so that the fin or flash which connects each handle with the next handle in the group, is connected to the mid-

dle of the back or front face i. e. the large face of the blank and not to the edge. In practicing my method and after the molding of each group of handles is completed the handles are readily separated from each other by the fingers, by reason of the fact that the fin or flash connecting them is very small and exceedingly thin, thus permitted of readily buffing or otherwise removing what remains of the fin or flash from the two flat faces of each blank. This can be done cheaply and economically by passing the blanks through suitable automatic buffing machines.

Other objects of the invention will appear from the following description and appended claims when taken in connection with the accompanying drawings. Fig. 1 is a perspective view of a blank of pyroxylin or similar material. Fig. 2 is a perspective view of a gang die with a gang of molded handles therein. Fig. 3 is a perspective view of the molded gang of handles. Fig. 4 is a section through several of the handles, illustrating one method of separating the handles. Fig. 5 is a perspective view of a separated handle showing the fin or flash on one face thereof, the flash being of exaggerated thickness. Fig. 6 is a perspective view of a finished handle.

In accordance with my method, I employ, preferably, a sheet or slab of either partly seasoned or fully seasoned pyroxylin material, such as the slab 10, Fig. 1. The slab may be warmed on a steam table or elsewhere and placed in the slab forming

(Continued on page 158)

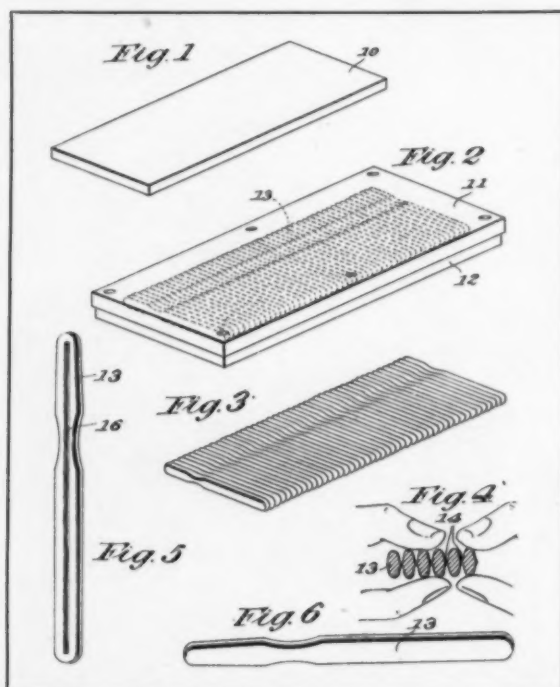
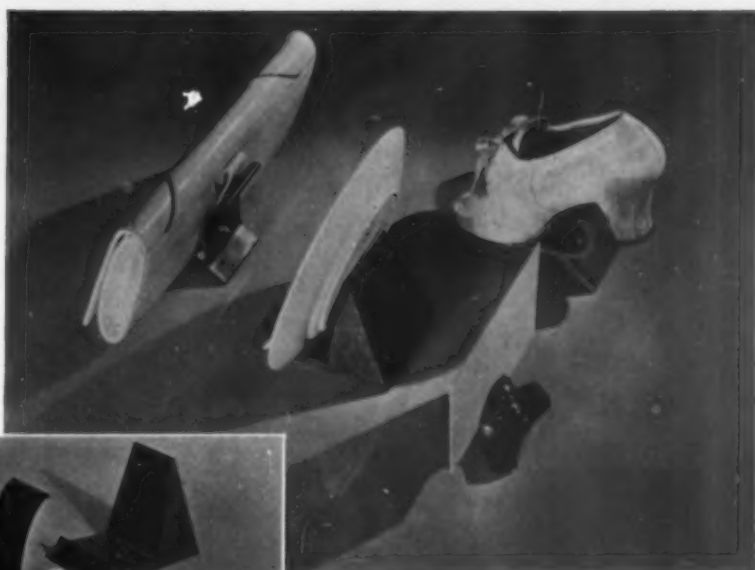


Illustration shows pyroxylin blank, gang die, view of gang of handles, manner of separation, handle showing fin and finished handle.

Selling More Merchandise With Molded Display Easels



Graceful lines, a permanent lustrous finish unaffected by temperature characterize these Bakelite molded merchandise display easels by Schneider Brothers, Chicago. Four models are in production: B for such articles as ladies' handbags, C, which can set in two positions, F, for bulky articles, and K for show cards up to 9 by 12 inches.

THERE has long been a need for economical merchandise displays which combine a maximum degree of utility with great versatility. In other words, display devices besides showing off wares to best advantage must be readily adaptable to any scheme of counter or window decoration. In addition to this, they must be sufficiently durable to make negligible replacement costs. The advent of Bakelite Molded into the Display field, in the development of the Schneider Brothers merchandise easels, meets these requirements completely.

These displays offer a combination of desirable features which augur well for their unqualified acceptance. Gracefully styled to fit almost all types of merchandise, they harmonize with any counter or window setting. Unlike the average display, they are unobtrusive, but rather lend emphasis where it does most good to the product displayed. Moreover, the Schneider easels are supplied in a range of colors, and with a beautifully lustrous finish, to provide the "eye appeal" so necessary to present-day merchandising.

They also present a number of

physical advantages in that they are washable, non-inflammable, and mechanically strong. They are not readily shattered or splintered. This attribute, plus the fact that the displays are smooth in finish, is essential in the display of fabrics where a rough, splintery surface might injure the cloth. They do not "sweat" so that the finest of silks and leathers may be placed against them with the utmost safety. In addition, they are unaffected by sudden changes in climatic conditions. Summed up, these features guarantee permanent satisfaction. Yet, despite numerous advantages over other types of merchandise displays, the easels are extremely low in cost.

The Schneider line, at present, consists of four types of Bakelite Molded easels, each of which have been developed to meet varying requirements. Model "B", sleek and stately, is designed for the display of small wares, such as ladies' handbags, pens, pencils, and other stationery. Model "C" affords a wider range of service since it may be placed in either of two positions for the presentation of dinner ware, silver service, dainty footwear, cosmetics, jewelry, etc.

Model "F" is the giant of the family, finding employment where bulky, cumbersome articles are to be displayed. A slot has been incorporated in its design for the accommodation of price tickets. Model "K" is a show card holder equipped with an automatic spring clip adjustable to any thickness. It will hold securely any card up to 9"x12".

Just as Bakelite Molded has capitalized on the value of "eye appeal" in exerting a powerful influence on packaging methods, so will it assist this three-dimensional advertising medium, Display, in facilitating the rapid movement of goods across the dealer's counter. In raising products above the level of surrounding merchandise, in lending atmosphere, dignity, and fine appearance to high quality wares, and in tying together several units of a line to achieve a "family" presentation, Bakelite Molded displays are demonstrating their superiority. The Schneider easels are but forerunners of interesting new developments in dealer aids which can be expected in the not-so-distant future. They point the way to a definite trend.

The Paris Trend in Umbrellas

By F. deFrancia

Du Pont Style Service, Paris, France

A RETURN to the classic in feminine accessories is clearly noted in the smartest shops here. In umbrellas the extravagant color schemes of a year ago seem to have totally gone out. The principal shades now on view are Navy blue, dark brown and black. In the Navy blue and brown models there are a few showing subdued Roman stripes three or four inches from the border.

There is also a conservative trend in the size of the umbrellas being shown. The Tom Thumb model is still offered but it is not as short as formerly, being just short enough to fit into a suitcase and still be as large as it can while retaining this quality.

Handles and Rib Tops

The handle and the top of the ribs are the only parts of the umbrella that would appear to permit elegance and manufacturers have taken full advantage of these points. In the black models the tops of the ribs imitate tortoise shell in plastic. In the Navy blue models these tips are blue or sometimes an attractive pink or

pale brown. The homely steel rib blackened with enamel has altogether disappeared.

Handles are also less eccentric. They no longer show exotic birds' and dogs' heads. Three types seem to be in favor, the simple crook as used in the man's umbrella, the straight handle slightly bulging at the top and the modified bulging crook. There are several models being shown where the main part of the handle is in malacca, then a discreet gold band, and the tip is finished in a knob of imitation tortoise shell. Usually Pyralin is employed. A certain number of plain crook models also show handles in watersnake skin in brown tones and pebbled shark skin in light grey. This has a tendency to relieve the drabness of the umbrella. Another model, which has been attracting attention, has a handle of plaited raffia in Navy blue and white, crossed attractively. This was attached to a Navy blue rayon silk umbrella. Nearly all the umbrellas being shown are of a rayon grosgrain material instead of smooth silk, which tends to give them originality with the dull colors now in vogue.

13, which is done, preferably, by a slight pressure of the fingers. After separation of the handles by the fingers, it will be seen that each handle is provided on opposite flat faces with an exceedingly thin fin or flash 16. By having the fins or flashes on opposite flat faces of the handle rather than surrounding the edges of the handle, the fin or flash can be removed by a mechanical ashing or buffing device, after which a mechanical polisher may be employed to give the handle a highly polished finish. This can be done only with difficulty if at all where the flash is on the edge of the blank. Then if desired the handles may be carried through a lacquer dip and humid drying chamber, or the handles may be spread automatically on a foraminous work support and sprayed with lacquer. The finished handle is shown in Fig. 6.

Claims

Three of the four claims of the inventor are:

The hereindescribed method of making tooth brush handles which consists in molding a blank of pyroxylin material in a gang die to provide a gang or group of handles on edge with a fin connecting the middle of the adjacent faces of adjacent handles, separating the individual handles, and thereafter removing the fins.

The hereindescribed method of making tooth brush handles in gangs or groups, which consists in molding a slab of pyroxylin to form a group of handles on edge connected by fins at the middle of the adjacent faces, separating the individual handles, and removing the fins.

The method of making tooth brush handles which consists in molding a plurality of blanks in a die, said blanks being connected by a flash or fin joining the flat sides of proximate blanks, said fin being thin enough to permit the blanks to be readily broken apart without injury, separating the blanks and removing the traces of the flash.

Gang Molding of Toothbrush Handles

(Continued from page 156)

die which comprises upper and lower die members 11 and 12 respectively and is provided with a series of mold cavities corresponding in shape to the handles to be formed, these being arranged with their flat faces toward each other. The die is so constructed that the flash or fin i. e. the portion of waste stock is exceedingly thin. In practice this is hardly thicker than tissue paper, but sufficient

to hold the blanks together in a gang or cake. The die is put into an hydraulic press and the slab therein is formed into a group or gang of molded tooth brush handles, as shown at 13 in Fig. 3. It will be seen from Figs. 3, 4 and 5 that the handles are positioned on edge and that they are interconnected by webs 14 called "flash". The next operation is to separate the individual handles of the group



Metal screen fastened to Bakelite Molded goggles with Hardened Metallic Drive Screws.



Cover fastened to molded Durez clock case with Hardened Self-tapping Screws.

Quicker, cheaper, better means of fastening to Celluloid, Karolith, Galalith, etc.

In making pocket-book and ornamental novelties, Frank Quigan, Inc., Brooklyn, N. Y., once used machine screws, wood screws and rivets for fastening metal parts to Celluloid, Karolith, Galalith and other plastic materials. Machine screws necessitated costly tapping. Wood screws failed to hold. Peened rivets were not neat in appearance and parts were frequently damaged in peening.

By replacing common fastening devices with Hardened Metallic Drive Screws—the parts were improved in appearance—fastenings were made so securely that the return of unsatisfactory merchandise was minimized—assembly costs were reduced 25 per cent—production speed was considerably increased.



Type "Z" Hardened Self-tapping Screws

For joining and making fastenings to molded, cast and laminated plastics; aluminum and die castings, sheet metal. Turn Screw into drilled or molded hole. Can be removed and replaced.

Many molders and scores of concerns assembling plastic products have found that Self-tapping Screws effect large savings, and make better fastenings than molded inserts, machine screws and rivets. It will pay you to find out what these unique Screws can do on your work.

Mail coupon for FREE SAMPLES for trial. Attach a description of one or more fastenings and our Assembly Engineers will report whether you can use the Screws to advantage. Tell us—1. How fastening is now made. 2. Thickness of part to be fastened. 3. Thickness of material in which screw is to engage. 4. Kind of material. If convenient send a blue print and a sample of the part under consideration.

Type "U" Hardened Metallic Drive Screws

For making permanent fastenings to molded, cast and laminated plastics; also iron, brass and aluminum castings and steel. Just hammer the Screw into a drilled or molded hole.



PARKER-KALON *Hardened* Self-tapping Screws

PAT. IN U. S. AND FOREIGN COUNTRIES

PARKER-KALON CORPORATION, Dept. B, 196-202 Varick Street, New York, N. Y.

Send information on Self-tapping Screws. Also, can they be used to advantage for assemblies described on attached sheet?

Name and Company

Address

CORRESPONDENCE

With the Editor

The Editor

Plastics & Molded Products

The writer wishes to call your attention to a statement in your publication of March Vol. 8 No. 3 on page 138 under the heading "And Now in Closing", in which you stated that a temporary receiver had been appointed for the Ceco Manufacturing Company.

Please be advised that the Superior Court appointed a temporary receiver for Ceco upon an *Ex Parte* hearing, of which this company had no notice, but a second hearing was arranged for the same day, at which we appeared and the order appointing the receiver was immediately vacated.

We would appreciate your making mention of this in your next issue.

Very truly yours,
Ceco Manufacturing Co., Inc.
By Ernest Kauer, Pres.

The Editor

Plastics & Molded Products

In returning herewith your bill for this year's "PLASTICS" I wish to say that I do so, not because of any dissatisfaction with your worthy publication itself, but because I am not now, nor do I expect to be, identified in any way with the plastics industry in the future.

I assure you that I appreciate the spirit of the gentlemen behind your publication, from whom I have received the utmost courtesy and helpfulness in all contacts, personally and otherwise. You have my best wishes for a big success and if it is ever in my power to render a service be sure it will be a pleasure to do so.

Respectfully yours,

B. D. DAVIES,
7 East 42nd Street,
New York N. Y.

avoided by the liberal use of cross references.

The synthetic plastics are allotted 18 entries in the present work. To this may be added a number of bibliographies under the headings, Synthetic resins, Cellulose acetate, Cellulose esters and ethers. The increased amount of work of a fundamental nature on these materials is reflected in the greater number of entries, as compared with the previous supplement. The subject of plastics is quite thoroughly covered.

The Bulletins may be obtained from the National Research Council, Publication Office, Washington, D. C.

All-Molded Setting Used at British Plastics Association Inaugural Luncheon

REVIVAL of the Roman art of pottery design and production was brilliantly in evidence at the inaugural luncheon of the British Plastic Molding Trade Association, which was held at the Savoy Hotel, London, during February. The whole of the table "dressing"—vases, lamps, clocks, finger bowls, etc.—everything was of molded ware of beautiful quality. Even persons associated with the molding industry were surprised at the comprehensiveness and beauty of the display of "table pottery" on view at this luncheon.

Barber Addresses Meeting

Captain J. W. Barber, chairman of the British Plastic Molding Trade Association, who presided, said that the art of molding originated in Continental Europe, but British manufacturers had not only wrested the art from Continental countries, but had left them standing. He declared that the molding industry had become one of prime importance to the country and that the articles seen on the tables were merely a domestic sideline. The association had a very successful inaugural.

Book Review

Bibliography of Bibliographies on Chemistry and Chemical Technology, 2nd Supplement. National Research Council. Washington, D. C. 1932. 150 pp. \$1.50

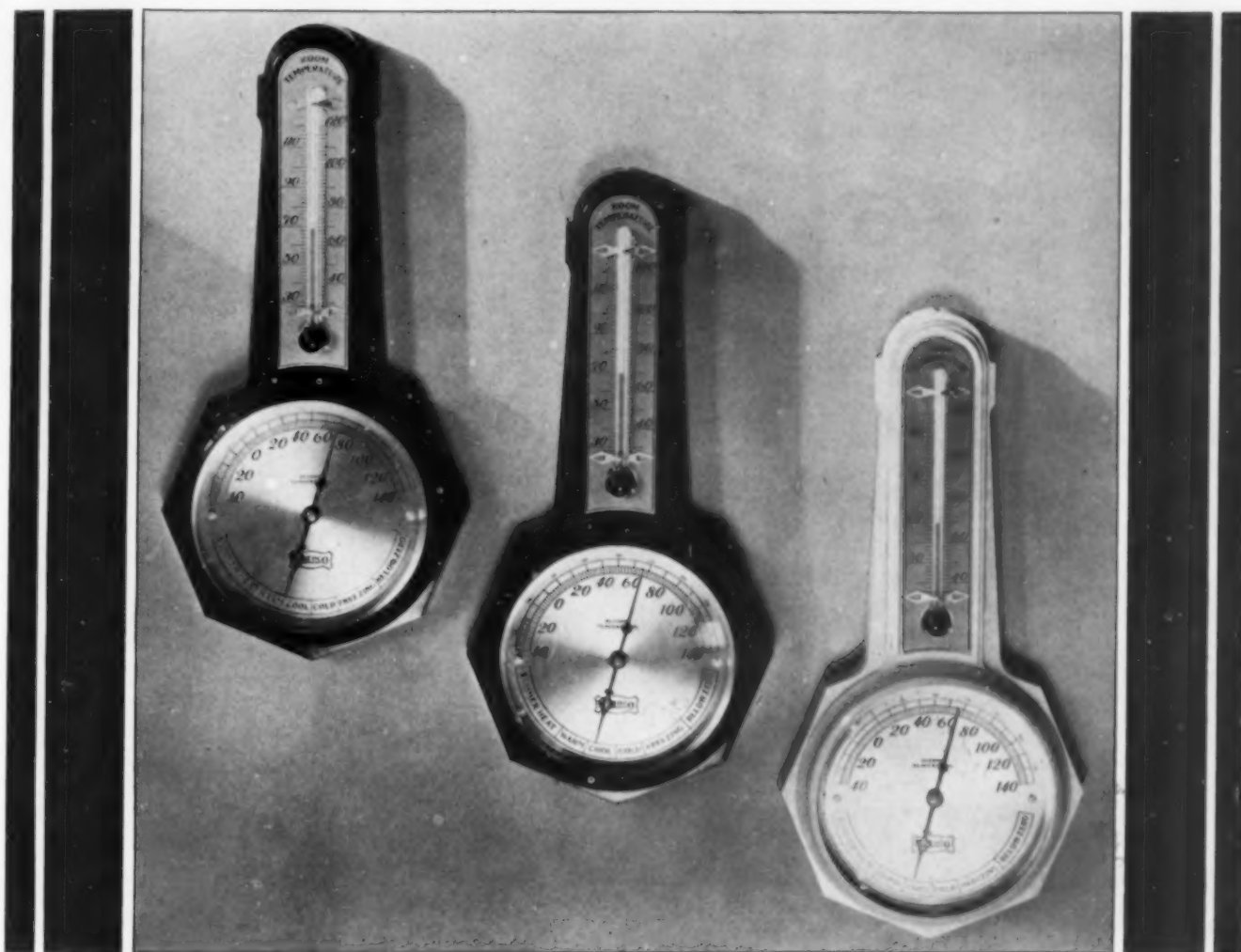
THE National Research Council announces the publication of Bulletin 86, which is the Second Supplement to the Bibliography of Bibliographies on Chemistry and Chemical Technology covering the period 1929-1931. The original Bulletin (No. 50) covered the period 1900-1924 and contained about 10,000 bibliographies classified under 2400 headings. The First Supplement (No. 71) covered the period 1924-1928 and contained about 4000 bibliographies under 1050 headings. The Second Supplement (No. 86) covers the period 1929-1931

and contains approximately 3300 bibliographies under 950 headings.

As the title indicates, the work (as in the case of Bulletins No. 50 and 71) is a compilation of bibliographies published as separates, or at the end of books or magazine articles, or as footnotes to the same on the numerous aspects of pure and applied chemistry. Each entry gives name of author or compiler, title, and place of publication. The majority of the entries state the number of references, thus giving an indication of the completeness of the particular bibliography. The entries are classified under the proper subject-headings, alphabetically arranged. The duplication of individual entries has been largely

2280 BLACK

Another new Durez material, designed to overcome dogskin, and recommended for first-quality work



EVERY so often there comes to the molder's desk an order for pieces with an exceptionally smooth surface. Clock cases, perhaps. Jar caps. Thermometers. For such work, where appearance is so important a factor to the customer, Durez has recently perfected 2280 Black. Already, several molders have commented upon their success with it.

Smooth as polished ebony

Durez 2280 has an unusually smooth glossy surface. When of the right plasticity, and when molded properly, it is almost entirely free from dogskin and waviness, especially over large flat surfaces. Care must be taken, however, not to use a softer grade than the job requires.

The water absorption of 2280 is less than with the regular black. The material performs and molds under the same conditions as standard grades—although the curing time can usually be improved. 2280 is supplied in three grades—soft, medium and hard.

Molded properties

Specific gravity 1.34
Weight per cubic inch78 oz. (22.15 grams)
Impact strength 1.28 ft. lbs. per cu. in.
Transverse strength 12,000 lbs. per sq. in.
Dielectric strength 480 volts per mil

The best way to become acquainted with this material—or with any of the many other Durez grades, suitable for every

molding purpose—is to try it. We shall be glad to send a sample for your own tests. Or, write for more complete information, and for a copy of our free illustrated booklet. Our services and recommendations are at your disposal. General Plastics, Inc., 4 Walck Rd., N. Tonawanda, N. Y. Also New York, Chicago, San Francisco, Los Angeles.

The makers of Durez are also the makers of Durez Varnishes and Laminated Stock

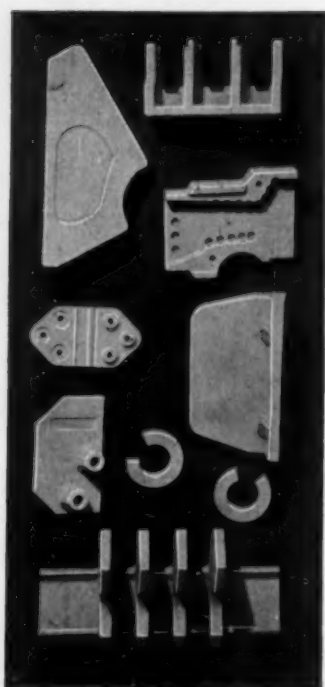
DUREZ

THE PERFECT MOLDING COMPOUND

CETEC REFRACTORY



Outstanding in Heat- and Arc-Resistance



CETEC REFRACTORY NUMBER 94 has good mechanical strength and is a superior insulation for arc shields, rheostat bases, panels, heating appliances, etc.—wherever temperatures of the order of 1000 degrees centigrade or severe arcing conditions must be withstood.

Cetec is a G-E product—developed in the research laboratories of the General Electric Company.

For further information on Cetec, write to the Plastics Department, Meriden, Connecticut, for our publication GEA-1456.

OTHER PRODUCTS—

Textolite laminated

Textolite molded

Cetec cold-molded

GENERAL  ELECTRIC

PLASTICS DEPARTMENT, MERIDEN, CONNECTICUT

Benzyl Cellulose---A New Plastic Introduced at British Industries Fair

AN entirely new plastic material which has never before been produced in commercial quantities, and which is claimed to have a number of important advantages over other forms of plastics, is being shown at the London and Birmingham sections of the British Industries Fair. This is benzyl cellulose, which is now being put into production by Imperial Chemical Industries, Ltd., the great British chemical combine.

Properties

Chemical Age, of London, in a recent issue, summarizes some of the outstanding characteristics of benzyl cellulose as follows: Benzyl cellulose is prepared by the action of caustic soda and benzyl chloride on cellulose. Benzyl alcohol, dibenzyl ether and sodium chloride are the by-products formed. As benzyl cellulose is soluble in these organic by-products the reaction mass is in a rubbery gelatinous form from which the by-products are removed during the purification. Various organic solvents may be used in the purification to extract the benzyl alcohol and dibenzyl ether, but the sodium chloride is removed during the water washes. When purified and dried, benzyl cellulose is of a cream colour, which becomes white when bleached. The viscosity of the product may be varied either during the process of benzylation or by subsequent treatments. In this way, a range of materials suitable for various technical applications may be prepared. Various degrees of benzylation may be attained, but the technical product, with the most useful range of solubility contains approximately two benzyl groups per $C_6H_{10}O_5$. Benzylation is a progressive reaction and therefore differs from acetylation, where the tri-ester

is first prepared and is then partially hydrolyzed to produce the acetone-soluble acetate, which is employed for most industrial purposes.

Outstanding Features

The outstanding property of benzyl cellulose is its stability. It resists the action of alkali up to 20 per cent concentration, is unattacked by sulfuric acid of accumulator strength (sp. gr. 1.4) and thus has advantages over cellulose acetate. It is thermoplastic and can be heated up to $180^{\circ}C$. without fear of decomposition, and being relatively non-inflammable, like the acetate, can be worked at high temperatures without danger. A property which gives it advantages over other cellulose derivatives is its resistance to water. Its hygroscopicity is 0.5-1.0 per cent, compared with 8-9 per cent in the case of cellulose acetate. Films and articles made from benzyl cellulose are practically impermeable to water. The electrical properties of benzyl cellulose are also excellent and since it is unaffected by ozone there is promise of a wide outlet for it in certain directions in the electrical industry where rubber rapidly perishes.

Relation of Design to Plastics

(Continued from page 148)

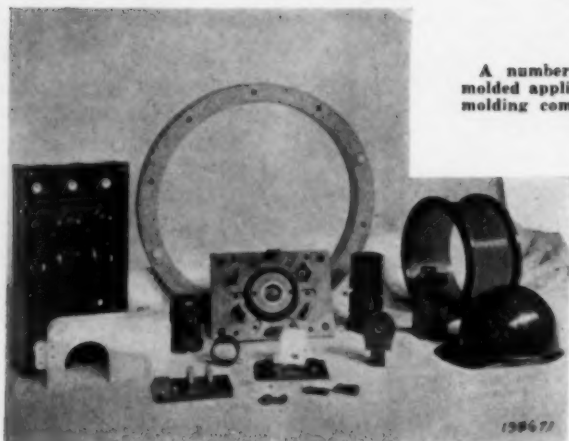
inated construction consisting of treated sheets of paper, cloth, or asbestos. Trays, helmets, and filing boxes are representative products of these materials.

Molded Compositions is a term applied to all molded Westinghouse materials not defined as Moldarta or Molded Micarta. In this classification are to be found compositions of lime-silica-asbestos, cement-asbestos, shellac, rubber, cellulose acetate, mica-glass (Mycalex) and pitch-asbestos.

Moulding Powders

The thermoplasticity and stability of benzyl cellulose make it an ideal base from which to prepare moulding powders. Such moulding powders show no signs of decomposition on prolonged storage. Moulders are familiar with the smell of acetic acid which develops in many cellulose acetate moulding materials on storage, indicating the gradual decomposition which is taking place due, possibly, to traces of sulfuric acid, etc., left in the cellulose acetate. Even the action of relatively strong acid or alkali leaves the benzyl cellulose composition unchanged. Marine weathering tests on ship-board show that mouldings from these moulding materials, after months of exposure in the heaviest of seas and extremes of climate remain unaffected. The thermoplastic properties of benzyl cellulose, which melts at about $180^{\circ}C$. but softens at lower temperatures, endow the moulding materials with exceptional flowing properties. Such moulding materials are therefore ideal for use in injection moulding. They are free from volatile materials, no solvent is used in their manufacture, and the products therefore, do not warp. Moulding is carried out at temperatures of $120-160^{\circ}C$. For straight moulding a pressure of $\frac{1}{2}$ -ton per sq. in. suffices. No curing or hardening process is necessary.

Lime-silica-asbestos and cement-asbestos products as a rule are of very simple design; however, inserts may be incorporated and some fairly complicated shapes may be produced through careful design. The main outlet for these pieces is in service demanding a heat resistance up to a maximum of $400^{\circ}C$, resistance to arcing, or for spacing parts to be used in large quantities. These compositions are very porous and will absorb from 12 to 18 percent of



A number of examples of difficult molded applications of various types of molding compositions.

water unless treated with asphaltic materials or drying oils. They are much weaker than most plastics with the possible exception of some of the cheaper grades of materials now largely replaced by the synthetic resin products. Insulating bases—usually impregnated, arc boxes, barriers, spacers for transformers or switches, and electric iron parts are frequently made of inorganic cold molded materials.

Other Molded Compositions

Shellac compositions now are relatively unimportant; however, in some installations involving low temperatures but an occasional light arcing they have a limited application. Usually some other form of insulation virtually as satisfactory with proper designing may be substituted with advantages in the strength of the finished piece.

Cellulose acetate is used to advantage in the decorative field or in special applications where a transparent or translucent composition is essential. These products of course must not be subjected to any appreciable heat but for many parts desired in light shades and intended for room temperature service the material is particularly of interest.

Mica-glass (Mycalex) is a recently introduced molded composition which may be supplied in rather simple molded forms. The bond in this case usually is introduced in the form of pow-

dered lead borate and the mica-lead borate mixture is pressed at a high temperature. Inasmuch as the finished product will soften on reheating at a temperature of approximately 500°C the parts must not be placed in service approaching the distortion limits. A thin porous surface remains on the molded pieces and as a general rule this is removed by machining or grinding. Mycalex is extremely good electrical insulation and has been used extensively in radio transmission and for railway service. For the molding of brushholder insulator studs it is of particular interest as the material has very great strength in a compact unit which offers an inorganic surface free from carbonization in the event of a flashover. The coefficient of expansion of Mycalex corresponds closely to that of steel, therefore metal inserts may be imbedded quite satisfactorily in molding.

Additional plastics of minor importance in the Molded Composition group are available; however the extent of use is somewhat limited through the general preference for other materials or for the reason that they are so new that there remains to be a satisfactory outlet developed for them.

Type of Service

In the determination of the proper material for a molded part, as many as possible of the factors pertaining to the service expected or the contingencies which must be anticipated

should be available. In some instances, particularly for industrial service, the details are not very clearly defined to the manufacturer and in these cases the best material in the judgment of the engineer is given with a description and the limitations of the parts. In most applications it is possibly of more importance to advise of these limitations than to emphasize the main advantages of the materials. The property of primary importance naturally should be considered first and the design so made that the other requirements are completely satisfied. For example a complicated part such as a small meter base may require the introduction of numerous small inserts in thin sections and close dimensions that must be permanent after assembly. The thermo-setting plastics of the type which may be readily formed with a minimum of applied pressure are adapted for such moldings. The reinforcements of the base may be incorporated in the design to provide for adequate strength in assembly. In another application such as shields for arc boxes the heat resistant compositions of the cold molded inorganic type are required and as a result the design must be such that no stress is applied on removal of the part from the mold and that practically all sections may have the benefit of a directly applied pressure for molding.

Value of Experience

Even with the adequate factor of safety in design there are at various times misapplications of the assembled apparatus or a failure to follow installation instructions which may lead eventually to field troubles. Through long experience the consumer has learned to appreciate the limitations of glass, of porcelain, or even metal castings; however molded materials are products of a so-called infant industry and the public has yet to appreciate that none of them will withstand every abuse which may be applied. The

mine employee who conveniently strikes a switch handle with a heavy stick, the novice who expects the urea-formaldehyde tableware of delicate design to withstand unlimited resistance to impact, or the user who may place the latter product in direct contact with excessive heat soon learns that he must adjust the service to the new product which he will be using even more extensively in later years.

The adoption of plastics will become far more general as soon as the designer becomes more familiar with the application of the proper material, the proper designing of the parts, and the excellent service which may be anticipated in the assemblies of various types of equipment.

The Technology of Cellulose Acetate

By Dr. Aladin

THIS series was begun in the March 1931 issue of *Plastics & Molded Products* and comprised a review of 235 patents issued during the past ten years. The material was broken down under the headings Apparatus; Pretreatment; Catalysts; Acetylation; Hydrolysis; Finished Products. Following is an index of the patents included in the series with the serial numbers.

United States Patents

Patent No.	Serial No.
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1,546,902	221
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BENZYL CELLULOSE

ETHYL CELLULOSE

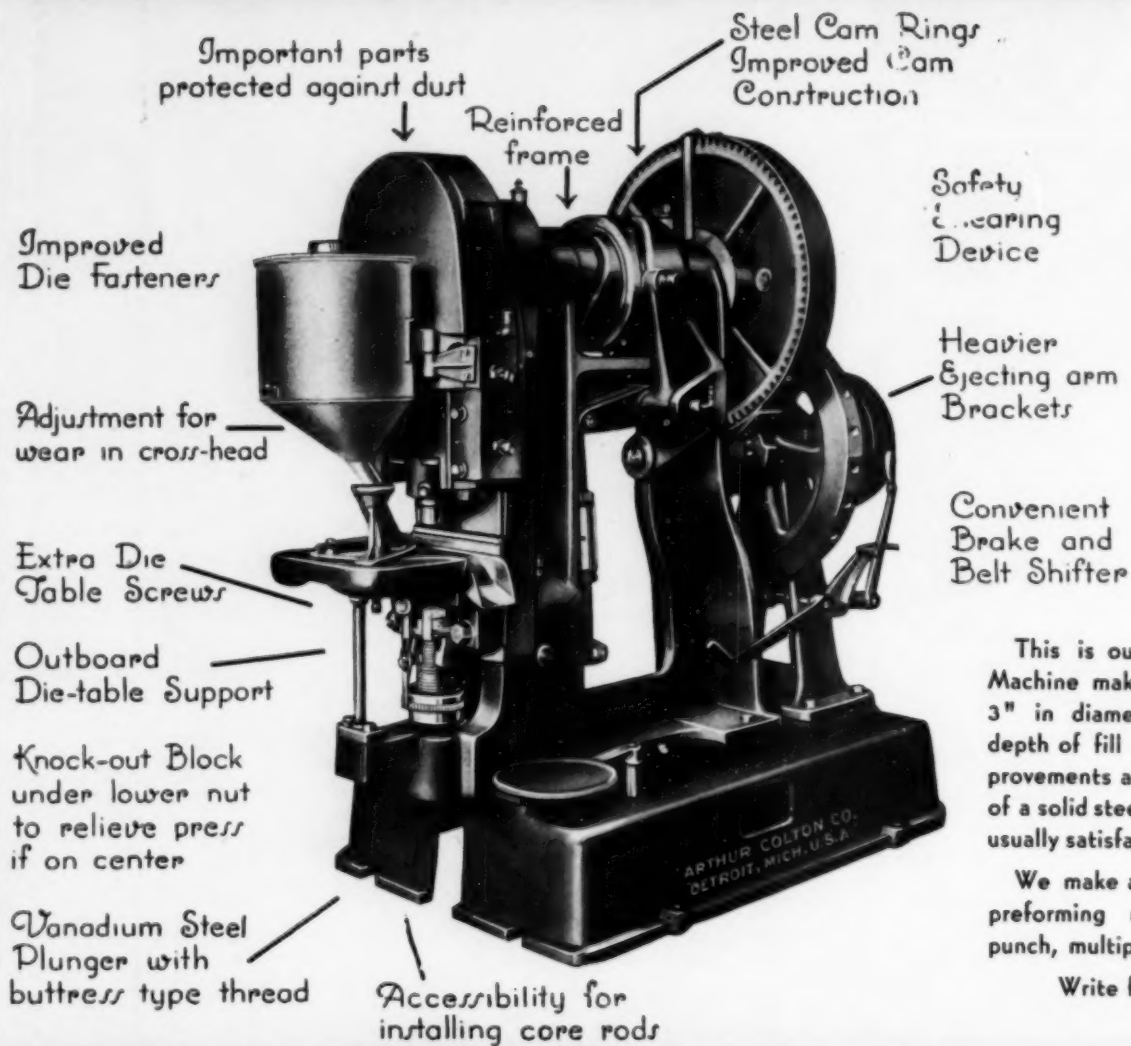
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1,566,398	1
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1,652,024	92
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240,624	99
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246,476	38
249,173	25
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264,181	64



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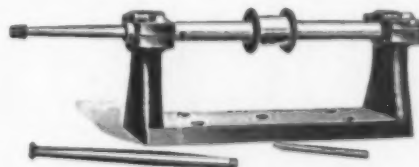
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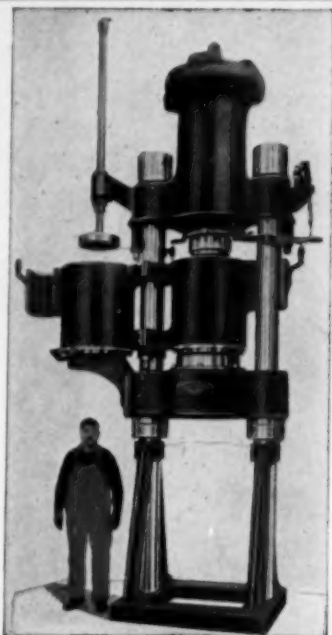
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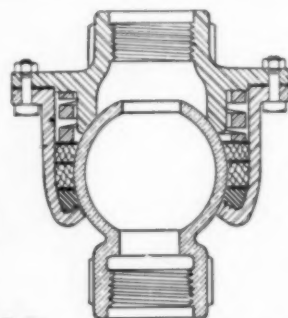
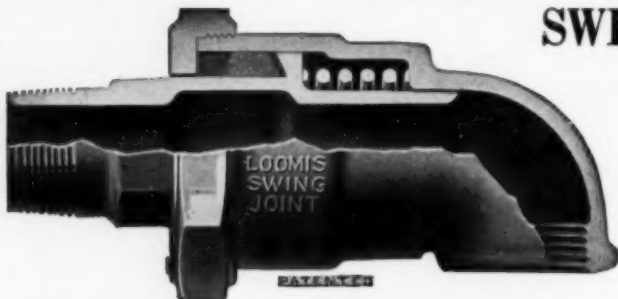
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264,937	65
265,267	100
267,569	195
268,289	66
268,778	228
269,012	82
269,530	148
269,543	229
270,656	4
273,743	196
274,814	5
275,286	197
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282,791	6
282,793	101
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(Continued on page 172)

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Producers of the finest
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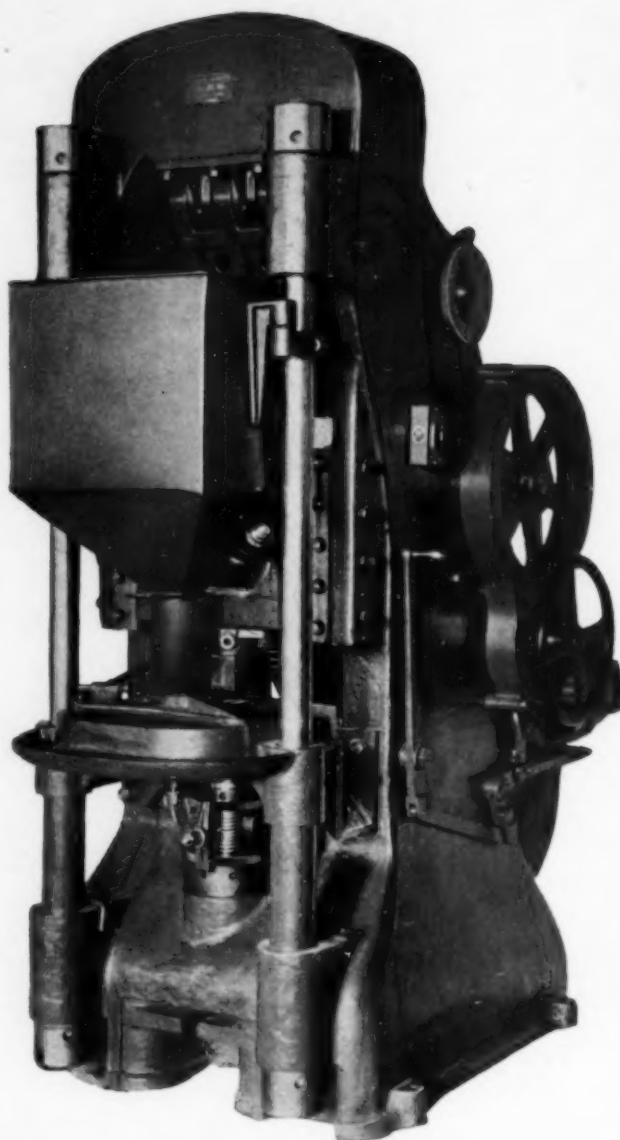
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NEWS of the INDUSTRY

Molders Hold Busy Meeting Plan Trade Research

THE Molded Insulation Section of NEMA held its first meeting on the new schedule on Friday, February 19th, at the Hotel Statler in Buffalo. Standing committee meetings were held in the morning and the section met as a whole in the afternoon. This new arrangement met with the hearty approval of the membership.

The Trade Research Committee, H. D. Randall, chairman, presented a plan for studying tool capacity in the industry on a number of articles in wide production. The purpose of this is to determine whether the industry is overtooled in certain lines, whether further tool investment is justified—all this in line with present and possible future production requirements. The information is to be gathered by means of questionnaires. The membership agreed that this study should prove beneficial to the industry.

Seek New Members

The Membership Committee, G. C. Wilson, chairman, reported that a number of molders are being lined up for membership in the Section. Kuhn & Jacob Moulding & Tool Co., Trenton, N. J., George Kuhn, Executive, were approved for membership in NEMA, to be affiliated with the Molded Insulation Section. Announcement was made of the resignation of F. J. Groten as Associate Member representing General Electric Co. Hereafter this company will be represented by H. D. Randall and R. E. Coleman.

Members present at the meeting were, American Insulator Corp., Prescott Huidekoper; Auburn Button Works, W. A. Freyer, Douglas Woodruff; Boonton Molding Co., G. K. Scribner;

Boonton Rubber Mfg. Co., R. W. Fost; Chicago Molded Products Corp., E. F. Bachner; Diemolding Corp., Donald Dew; General Electric Co., H. D. Randall; Kurz-Kash Co., C. A. Kurz Jr.; Northern Industrial Chemical Co., B. E. Schlesinger; Norton Laboratories, Inc., J. B. Neal, G. C. Wilson; Reynolds Spring Co.,

J. G. Rossiter.

Others present were A. W. Paull Jr., and A. D. Paull of the Wheeling Stamping Co., R. C. Gilmore, Jr., Plastics Publications Inc. and E. S. Aumend, NEMA.

The next meeting will be held at NEMA headquarters in New York City, Friday, April 15th.

Pyroxylin Sheets, Rods and Tubes in 1931

THE Bureau of the Census presents in the following table monthly statistics on production and shipments of pyroxylin sheets, rods and tubes, based on data furnished by 9 identical establishments. According to the returns for the

Biennial Census of Manufacture, 1929, these establishments manufacture in excess of 95 per cent of the total amount produced for sale by all plants in the United States. This is the first report issued for this industry. Statistics are not available for months prior to January, 1931.

1931	SHEETS		RODS		TUBES	
	*Production	Shipments	*Production	Shipments	*Production	Shipments
January	944,618	903,011	176,433	157,020	32,148	27,408
February	1,020,612	1,049,826	151,147	138,352	42,871	29,825
March	1,159,504	1,173,581	170,506	153,412	56,422	48,128
April	1,238,543	1,105,269	194,227	164,009	57,821	44,137
May	1,311,564	1,072,086	165,978	134,293	69,473	63,528
June	965,265	946,008	174,770	159,337	109,084	86,338
July	990,980	927,970	172,517	166,095	131,789	114,332
August	1,026,936	1,004,694	188,943	172,071	63,162	47,236
September	1,086,052	1,141,643	226,560	224,271	71,438	53,642
October	1,130,616	1,195,434	220,473	185,230	67,686	52,865
November	898,576	934,602	132,162	125,933	45,810	34,898
December	666,159	996,971	120,651	116,948	24,908	27,133
Total	12,439,425	12,451,095	2,094,367	1,896,971	772,612	629,470

*Preliminary.

Calco Salesmen Meet

THE first joint sales convention of The Calco Chemical Company, Inc., and its associated company, Heller & Merz Corporation, was held recently at the Calco main office at

Bound Brook, New Jersey. Approximately 50 representatives from all the branch offices attended.

The first day was devoted to meetings addressed by Mr. R. C. Jeffcott, President of The Calco Chemical Co., Inc.; Messrs. F. M. Fargo, Jr. and August Merz, Vice Presidents; Mr. W. J. Robertson, Vice President of Heller & Merz Corporation; Mr. J. H. McMurray, Dr. V. L. Taylor, Mr. J. W. King, Mr. R. M. Boyer, Mr. N. B. Conley, and Mr. O. A. Badenhausen.

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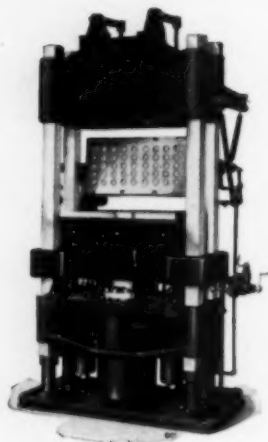
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the American Cyanamid Company, the parent company of Calco, and Dr. M. C. Whitaker were guests of honor at a dinner held at the Plainfield Country Club after which Mr. Bell briefly reviewed the history and growth of American Cyanamid and also outlined various important developments now under way.

The convention was closed the following day with a discussion of individual trade problems between the department managers and salesmen. The salesmen also were given an opportunity to inspect the plant under the guidance of the operating superintendents.

Parker-Kalon Catalog

THE new Parker-Kalon catalog contains a wealth of practical data on the use of self-tapping screws for fastening plastic and other materials. The varieties of screws are described, numerous actual applications are illustrated, graphs demonstrating improved qualities are shown and methods of test are outlined. It is claimed that considerable savings in time, material costs and labor are gained by using self-tapping screws in molded assemblies. Copies may be had on request to Parker-Kalon Corp.

Hercules Elects New Director Declares Regular Dividend

WILLIAM J. Lawrence, president of Paper Makers Chemical Corporation, a unit of Hercules Powder Company, was elected a director of the Hercules Powder Company today, announced Russell H. Dunham, president of Hercules, following a board meeting. The board also declared the regular quarterly dividend of \$0.75 on the common stock, payable March 25 to stockholders of record March 14.

Technology of Cellulose Acetate

(Continued from page 169)

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638,898	234
638,900	12
638,902	114

PLASTICS & MOLDED PRODUCTS

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93,814	176
94,022	119
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96,140	178
103,858	179
104,294	180
105,945	181
113,353	15
115,706	80
126,410	235
126,588	182
127,790	212

Plastics Curing Time

(Continued from page 155)

described has been especially developed for the purpose at the laboratory. It has not yet been officially adopted as a standard machine for measuring cold flow by the A. S. T. M., but is proving quite satisfactory for this purpose.

Several other tests besides those mentioned are applied to some types of plastics, but the foregoing are the most important so far as physical qualities are concerned. Besides tests on standard samples of plastic materials, many tests are made also on molded parts taken from production runs as a check to insure maintenance of certain desirable qualities. These tests often require special setups or special forms of equipment and are of less general interest than the foregoing.



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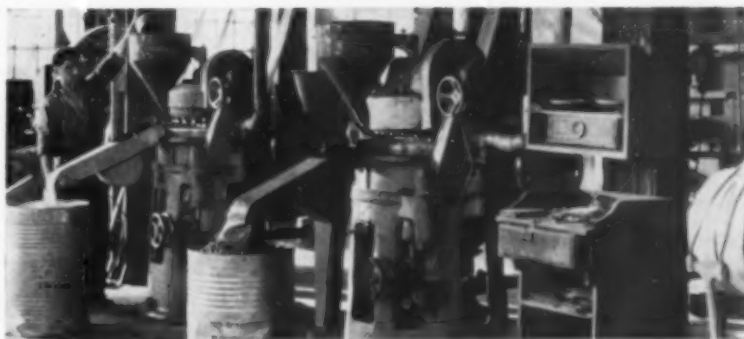


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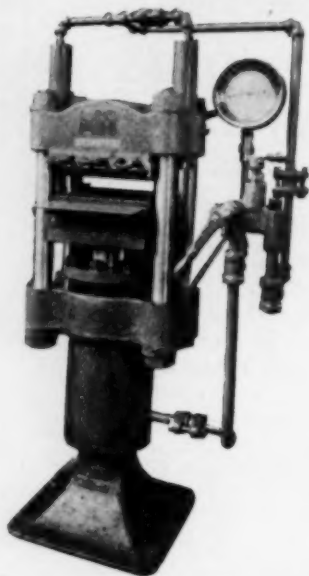
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PLASTICS & MOLDED PRODUCTS

TECHNICAL ABSTRACT SECTION

A Review of Literature and Patents

Pyroxylin Plastic Antifrost Shield.

Harry H. Steinman, of St. Paul, Minnesota, assignor to No Frost Clear Vision Shield Company, Inc. U. S. P. 1,824,751; Sept. 22, 1931.

An anti-frost shield formed of a transparent, planiform, flexible sheet such as a pyroxylin plastic having a plurality of indentations spaced inwardly from the edges thereof, one of said indentations being substantially centrally of said sheet, to hold the central portion of said sheet in spaced relation from a window glass on which it is mounted, and an adhesive strip connected about the edges of said flexible sheet to extend beyond said edges and adapted to fasten to a plate of glass on which the device is mounted, the adhesive strip drawing the edges of said sheet downwardly to distort the sheet from its normal, planiform shape.

Cashew Nut Shell Oil Compositions.

Mortimer T. Harvey, of East Orange, New Jersey, assignor to the Harvee Corporation, of Newark, N. J. U. S. P. 1,819,416; Aug. 18, 1931.

As a new composition, a solution of vulcanized rubber in cashew nut shell liquid.

As a new composition, an intermixture of rubber and cashew nut shell liquid.

The method which comprises heating a mixture of rubber and cashew nut shell liquid to effect a solution of the former in the latter.

Producing Resin Esters.

Alan C. Johnston, of Kenil, New Jersey, assignor to Hercules Powder Co., of Wilmington, Delaware. U. S. P. 1,824,020; Sept. 22, 1931.

10 parts of sodium hydroxide are dissolved in 100 parts of ethyl alcohol, 75 parts of gum WW rosin, or wood rosin, being subsequently dissolved in the alcohol solution. The solution is refluxed at a temperature of say about 80° C. and 25 parts of ethylene chlorohydrin, boiling point about 132° C., are added gradually to the refluxing solution. Sodium chloride or common salt will be formed and separates rapidly. The refluxing may be continued at a temperature of about 80° C. for upwards of twelve hours. When the refluxing has been continued sufficiently for the formation of the desired ester, the salt is filtered off and the alcohol and excess chlorohydrin removed by distillation. The ethylene glycol monoacetate remaining will distill at a temperature of about 250° C., under reduced pressure of say about 5 mm. A yield of about 45 parts of the ester in the form of a very viscous liquid and having an acid number of 5 will be obtained.

Resin. Herman Alexander Bruson, of Germantown, Pennsylvania, as-

signor to Rohm & Haas Co., of Philadelphia. U. S. P. 1,813,838; July 7, 1931.

The following mixture is placed in a suitable kettle equipped with an agitator and heated:

270 parts (by weight) benzophenone-2,4'dicarboxylic acid; 62 parts by weight glycerol (99%).

The heating is conducted so that the mass when molten is around 190-200° C. After 4-5 hours heating a hard resin is obtained which dissolves readily in acetone. After 8-10 hours heating this material goes over into an insoluble, infusible modification.

6 other examples are given.

Sealing Composition. Russell L. Jenkins and Charles Glennon Hardy, of Anniston, Alabama, assignors to Swann Research, Incorporated. U. S. P. 1,822,033; Sept. 8, 1931.

A sealing wax base containing a chlorinated diphenyl resin and approximately 50 per cent by weight of rosin.

Manufacture of Esters of Vinyl Alcohol. Willy O. Herrmann, Hans Deutsch, and Erich Baum, of Munich, Germany, assignors to Consortium Fur Elektrochemische Industrie, of Munich, Germany. U. S. P. 1,822,525; Sept. 8, 1931.

Process for the preparation of esters of vinyl alcohol comprising preheating a mixture of acetylene and the vapor of a carboxylic acid, conducting the preheated mixture over a heated catalyst at a velocity measured at the reaction temperature of more than 350 liters per hour per liter of reaction space, removing reaction products and recirculating the excess of acetylene over the catalyst.

Imitation Pearl. Harry E. Smith and William Bowker, of Newark, and Harry Conrow, of Lyndhurst, New Jersey, assignors to Celluloid Corporation. U. S. P. 1,814,641; July 14, 1931.

The process of making an imitation pearl sheet which comprises preparing a solution of pyroxylin of viscosity suitable for producing film on a wheel or by equivalent film making means, adding to said solution the silky, silvery variety of mercurous chloride as a lustrous material, producing thin semi-dried films therefrom by flowing or scraper action, uniting said films to form thicker sheets, slicing such sheets into pieces, massing the pieces promiscuously placed, subjecting the massed pieces to heat and pressure in one direction in a way to spread the area of the mass practically in toto in another direction with the effect of producing consolidation and a substantial flow of the pattern of said lustrous material in the direction of said spreading, then cutting therefrom

sheets or sections of desirable size or thickness.

Water Dispersion of Polymerized Styrol and Product. Willis A. Gibbons, assignor to the Naugatuck Chemical Company, of Naugatuck, Connecticut. U. S. P. 1,836,021; Dec. 15, 1931.

The invention comprises broadly depositing styrol from a solution or dispersion thereof upon a paper-making fibre in pulp form, removing excess solvent or dispersing liquid and subsequently forming the mass into a sheet or slab by drying and calendering or pressing.

The operations may be carried out with the usual paper-making machinery involving the use of a beater for beating the pulp, prior to adding the styrol, until it has nearly reached the condition required to form a satisfactory sheet on any standard type of paper or board making machinery. The beater itself may be used as an agitator for mixing the fibres and styrol or this may be carried out in other mixing apparatus. After thorough mixing of the solution or dispersion of styrol, the styrol is deposited on the fibres. Where the carrier for the styrol is an organic solvent, the deposition is caused by sheeting the pulp and removing the solvent by the use of heat or vacuum or both. Where an aqueous dispersion of styrol is employed, the styrol is deposited in a uniform manner by adding a coagulant for the styrol. Examples of such coagulants are methyl alcohol, barium chloride, alum, ethyl alcohol, acetone. In general it may be said that all coagulating agents for rubber latex serve to coagulate the styrol dispersion.

Film for Phonographic Records.

Heinrich Küchenmeister, of Berlin, Germany. U. S. P. 1,836,124; Dec. 15, 1931.

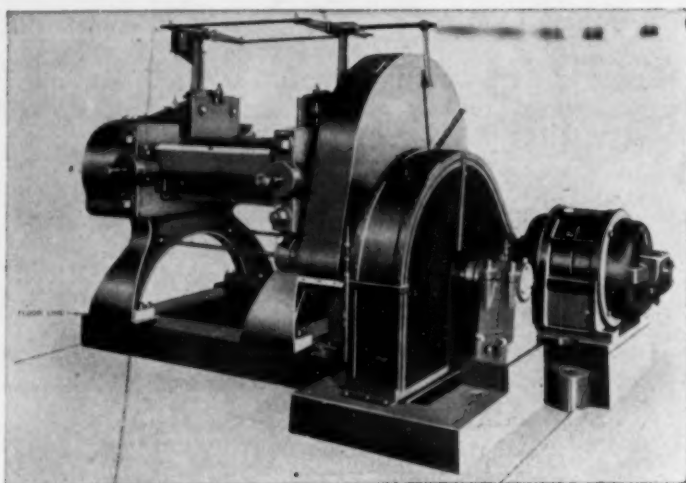
A flexible sound record comprising a narrow film of uniform width and finite length with but a single row of perforations, said perforations being located substantially along the center line of said film and a separate photographic sound record on each side of said row of perforations.

Condensation Products of Carbamides and Formaldehyde.

Wilhelm Punga, Karl Eisenmann, and Johann Kuchenbuch, assignors to I. G. Farbenindustrie A. G., of Frankfort-on-the-Main, Germany. U. S. P. 1,836,553; Dec. 15, 1931.

Example

2000 parts of urea are dissolved at from 90° to 100° C. in 1600 parts of commercial ethyl alcohol whereupon 24 parts of a concentrated hydrochloric acid are added. This solution is then slowly added to a solution of 2300 parts of gaseous formal-



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dehyde in 9000 parts of amylalcohol heated to 110° C.. The mixture is then stirred and after the reaction, the clear solution is neutralized by adding 100 parts of tertiary sodium phosphate.

200 parts of this solution are stirred at ordinary temperature with 5 to 10 times the weight of petroleum ether of a boiling point of about 40° centigrade. After stirring for a short time, the whole is allowed to settle and the supernatant liquor drawn off; the precipitated condensation product is then treated with 250 parts of ethyl ether, vigorously stirred for some time and filtered off. The fine powder of the precipitated product is then washed several times with ethyl ether and then dried in vacuo at 50° centigrade. The urea formaldehyde condensation product so obtained is dissolved at about room temperature in *n*-propyl alcohol while stirring so that a 40 per cent solution is obtained, and this solution diluted with ethyl alcohol to produce a 20 per cent solution.

A quickly drying lacquer having only a slight smell is obtained, coatings of which are scarcely attacked by water.

Cellulose Acetate and Carbamate Composition. Henry B. Smith, assignor to Eastman Kodak Company, of Rochester, New York. U. S. P. 1,836,687; Dec. 15, 1931.

A composition of matter comprising cellulose acetate and approximately an equal amount of a substituted or unsubstituted alkyl ester of carbamic acid.

A composition of matter comprising cellulose acetate and approximately an equal amount of ethyl carbamate.

A composition of matter comprising cellulose acetate and approximately an equal amount of ethyl carbamate.

Process for Acetylation of Cellulose.

Cyril J. Staud and Russell H. Van Dyke, assignors to Eastman Kodak Company, of Rochester, New York. U. S. P. 1,836,689; Dec. 15, 1931.

To 5 parts of air dried cotton linters there was added a mixture consisting of 25 parts of 99% acetic anhydride, 35 parts of glacial acetic acid and 1/10th part of selenic acid. The temperature prior to the addition of the cellulose was 27° C. and after the addition of the cellulose the temperature increased in a period of 20 minutes to 32 degrees C. after which it began to decrease. The temperature was then raised to 50° C. and maintained at that temperature for 23 hours.

At the close of this period the cellulose was present in the fibrous form, although the fibres appeared to be somewhat swollen.

The fibres were filtered off, washed with water until neutral to bromthymol-blue, dehydrated with alcohol and ether and dried. Analysis showed that there was 44.2% acetyl combined with the cellulose, while the theoretical percentage of cellulose triacetate is 44.8%.

Nonshatter Glass. Henry A. Gardner, of Washington, District of

PLASTICS & MOLDED PRODUCTS

Columbia. U. S. P. 1,836,914; Dec. 15, 1931.

A sheet of regenerated cellulose is coated on both sides with chlorinated diphenyl resin, or with a solution made by dissolving chlorinated diphenyl resin in an equal weight of toluol, the so-treated sheet is interposed between sheets of glass, and the superimposed sheets are pressed together, preferably after first having been warmed to the softening point of the resinous adhesive. In the case where toluol is used, evaporation of the toluol leaves a film of chlorinated diphenyl, upon the glass, comparable to that obtained by applying the resin in the absence of a solvent.

Method of Making and Treating Cellulose Acetate Involving Liquid Sulphur Dioxide. Lloyd M. Burghart, Assignor to U. S. Industrial Alcohol Co., U. S. P. 1,839,295; Jan. 5, 1932.

The method of making cellulose acetate products to obtain the same in a physical condition favorable for subsequent treatments which comprises reacting upon the material to be acetylated with an acetylating agent in the presence of liquid sulfur dioxide as a reaction medium, then subjecting the cellulose acetate in the same reaction medium and likewise under pressure to a hydration treatment, and then discharging the cellulose acetate in solution in the liquid sulfur dioxide into an expansion region, where the sulfur dioxide is abruptly gasified and released with disruptive effect from within the cellulose acetate as the latter is precipitated.

In the manufacture of acetone soluble cellulose acetate, the steps which comprise subjecting cellulose acetate to a hydration treatment in a solvent medium comprising liquid sulfur dioxide, said treatment being carried out under pressure in a closed vessel, and then discharging the contents of the vessel into an expansion region, where the liquid sulfur dioxide is abruptly gasified and released with disruptive effect from within the cellulose acetate as the latter is precipitated.

Method of Producing Composite Articles. Lloyd Emmons Wood. Assignor to Western Electric Company, Inc. U. S. P. 1,839,436; Jan. 5, 1932.

A method of producing a hollow article which comprises forming from sheet material impregnated with a phenolic condensation product, a plurality of blanks of identical contour and designed so that when superposed in reversed relationship, one of the blanks has overlapping portions with respect to another of the blanks, superposing a plurality of such blanks with each blank disposed in reversed relationship with respect to an adjacent blank, folding the blanks so that a uniform number of laminations exist throughout the folded structure, and then coalescing the blanks by subjecting them to heat and pressure to effect a curing of the condensation product and complete the formation of the article.

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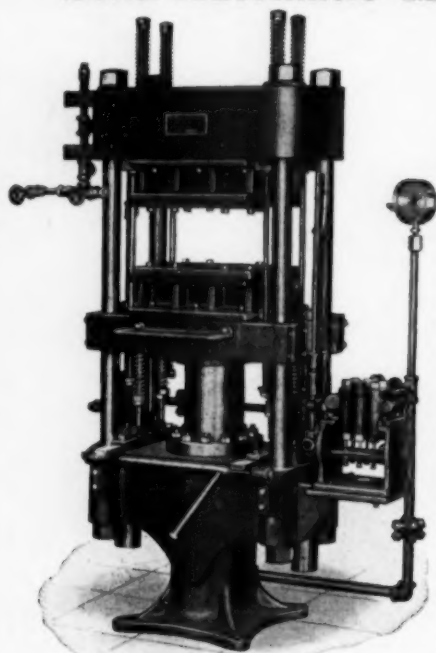
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Coating Composition. Gerald H. Mains, Assignor to Westinghouse Electric & Manufacturing Co. U. S. P. 1,841,138; Jan. 12, 1932.

A liquid coating composition comprising a synthetic resin of the phenolic condensation type, a solvent for said resin, China wood oil and a sufficient amount of furfural to dissolve the China wood oil, the China wood oil being present in amounts ranging from 1% to 5% of the weight of the resin.

Ownership Statement

Statement of ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912 of **Plastics & Molded Products** published monthly at Washington, N. J., for April 1, 1932.

State of New York, County of New York ss.: Before me, a Notary Public in and for the State and county aforesaid, personally appeared R. C. Gilmore, Jr., who, having been duly sworn according to law, deposes and says that he is the Business Manager of **Plastics and Molded Products** and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, **Plastics Publications Inc.**, 114 E. 32nd Street, New York City; editor, Carl Marx, 114 E. 32nd Street, New York City; managing editor, Nicholas Klein, 114 E. 32nd Street, New York City; business manager, R. C. Gilmore, Jr., 114 E. 32nd Street, New York City.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member must be given.) **Plastics Publications Inc.**; R. C. Gilmore, Jr., 114 E. 32nd Street, New York City; R. C. Gilmore, Sr., 114 E. 32nd Street, New York City; Carl Marx, 114 E. 32nd Street, New York City; A. K. Gilmore, 114 E. 32nd Street, New York City.

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5. That the average number of copies of each issue of this publication sold or distributed through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is (This information is required from daily publications only).

R. C. GILMORE, JR.
Business Manager.

Sworn to and subscribed before me this 15th day of March, 1932.

(SEAL) JAMES J. DOOLEY

My commission expires March 30, 1932.
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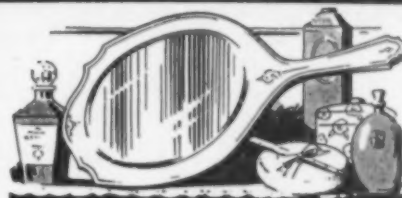
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And Now, In Closing:

W. G. DAVIDSON, Equity Receiver for the Kurz Kasch Co., states in a letter of March 26th that a plan for the reorganization of the company will be announced within thirty days . . . some of the Eastern representatives for the molders had a dinner meeting recently . . . yet that East and West business of Kipling's still holds good . . . Packaging continues to hold the limelight . . . Woolworth has added the Bouton perfume, Sivan nail polish and Ramey's rouge . . . the last being a urea job . . . Other urea ten cent items are: colored attachment plugs, screw caps for salt shakers, cocktail glasses . . . the glasses are a new shape and are sold by Bell Manufacturing Company (Boston) . . . Cast phenolics also are on the newer counters with paring knife handles and initial pins . . . molded items stay in the running through a new design for a Bakelite coaster . . . Crackerjack candy now offers a molded top . . . Frank Shaw has redesigned the Schick Dry Shaver and improved it . . . he is also handling the Culbertson Bridge Wheel, a large, beautifully molded piece . . . Among imported products, Yardley's Beetle jars deserve mention . . . A new toaster, the Victory, is in the drug stores . . . priced at \$1.19, it also uses molded . . . this parallels the battle on electric clocks, which can now be bought for \$.98 in small sizes . . . Two reorganizations are taking place in the West . . . and at least one, of importance, in the East . . . Kipling disproved! . . . Leon Quigley gave a plastic talk before the Rochester Chamber of Commerce . . .

THE achievements and philanthropies of George Eastman will be remembered for years to come. Man can not build a more enduring monument. Mr. Eastman, quite aside

from his interest in film, took a great deal of interest in plastics. His company reflected this in its researches for better basic materials for the Industry. His regrettable leaving, excusable because of his illness, takes from the chemical industries one who will be missed even by those who never knew him, so far-reaching was his influence.

READ again the article "What Profits Price Cutting" in our issue of September, 1929—over two and a half years ago! How applicable is it today? Just glance at this part of it for your answer:

"Let's repeat that: *the majority of molding work cannot be done satisfactorily at current prices.* Does that provoke our purchasing agent to some constructive thinking? Or would he rather go ahead, get the job at *his* price, and then have a suit with the molder over unfulfilled promises on construction? It has happened and is happening even now. Some molders cannot possibly construct a good mold on the specifications, and at the price, given. Consequently the output is ununiform or entirely unsuitable."

"On the other hand, does the above repeated sentence give the molder a thought or two? It should. Unfair price competition has got to be killed at the source. We are pretty sick and tired of all the excuses, expositions and comments on the sanity of the average buyer. He knows his job, and, although he knows less than nothing about molding, he can, and does, bluff men who know twenty times as much about it."

"We are not trying to offend or hurt anyone. Rather, our aim is to strive at a profitable solution of every trouble connected with the Industry. Such a solution is independent of any association or Trade Commis-

sion practises, for it is based on the tempered business instinct of every individual. It has been shown time and again that such tactics are not good business—either for dividends or satisfied customers, and it means a slow cheapening of the distribution market as well as the establishment of purchase competition."

AND then, from the October, 1929, issue we extract:

"To go back: our pet subject is not price cutting, but it arises more often than any other because there is more of it".

OUR elected representatives in Washington are off again. They sublimely dump the Democratic apple cart in the face, so to speak, of Mr. Garner. The sales tax, sponsored by Democrats, has been killed by its sponsors. Not that we mind, understand. We think that, in some ways, the sales tax is even more unfortunate in conception than the "soak the rich" income tax measure. But its defeat, while welcome to many lagging industries, clearly shows the futility of present day government and politics. The Democrats are again riding side-saddle, preparing to slide off.

The interesting thing about politics to us, is its display of human nature and emotions. Contrasting it with business makes the ordinary business man take heart. Certainly, if private enterprises were run according to our prescribed form of government, we would—. Well, look at our National Deficit!

Yet we are afraid. Afraid that, even in this Industry, we are witnessing the advent of a small political element who propose, after a fashion, prohibitive taxes to make up personal deficits. And whose prime motives in legislation are to veto their own bills.